questions of placebos; and of factors influencing ascorbate absorption in the clinical trials which have failed to demonstrate a significant effect of ascorbate. However one comes, in the end, back to the critical question of specificity of effect which bedevils the assessment of most of the reported effects of both vitamins C and E. While ascorbate can be shown to serve as an electron acceptor for many reactions in vitro it is almost always possibel to use other acceptors of similar redox potential. In this situation a guide to in vivo reality may be provided by a careful analysis of the symptoms of deficiency although as illustrated by many of the B vitamins there is no assurance of enlightenment even from this approach. At all events an attempt to apply such an evaluation leads only to other questions. For example what is the 'normal' state in respect to the virus infections and other conditions which are supposed to be diminished or prevented by ascorbate? Is there really any solid evidence that modern man is subjected to a higher level of biochemical stress which can be ameliorated by the high dose regimen as claimed here? It is not easy to see how one can best proceed to answer these and other similar questions but I am not convinced that the field is helped by the uncritical approach adopted by Dr Lewin in relating the in vitro and in vivo observations.

If one disregards the polemical aspects the book is useful in bringing together a mass of literature on the various aspects of vitamin C and will have some value as a reference source. The utility in this respect is however diminished by numerous mistakes and incomplete references in the bibliography. In all I see no particular reason to recommend it except as an additional source of material for those who believe in the mega-dose regime and are seeking bases on which to support their prejudice.

M. C. Scrutton

Purine and Pyrimidine Metabolism

CIBA Foundation Symposium (new series) No. 48

Elsevier/Excerpta Medica/North-Holland; Amsterdam, Oxford, New York, 1977
xi + 369 pages. Dfl 76.00, $ 30.95

Purine metabolism together with its regulation and disorders has been a continuing area of interest for biochemists and clinicians over many years. The attractions of this area of investigation has increased recently due to two major developments. Firstly, it has been shown that lesions in purine metabolism can in some instances be associated with immunodeficiency disorders and may possibly be the cause of some of these diseases. Secondly there is increasing recognition of the role of certain purines in intercellular communication. These developments have in turn focused attention on purine metabolism and its regulation which is far from completely understood in mammalian systems; especially in respect to tissue interactions, and to the relationship between exogeneous purine and pyrimidine supply and the rate of the novo synthesis of these metabolites in vivo. Thus the symposium is timely from many points of view and has brought together workers from a wide range of disciplines and interests. As might be expected there is considerable discussion, both biochemical and clinical, of the Lesch-Nyhan syndrome (Nyhan and McKeyan), and also of the use of cultured cells derived from Lesch-Nyhan patients to probe the relationship of the de novo and salvage pathways of purine nucleotide synthesis with special reference to the possible regulatory role of phosphoribosylpyrophosphate concentration (Reem). Further evidence for an important role for this metabolite is provided by studies on a gouty family in whom there is elevated activity of phos-

phoribosyl-pyrophosphate synthetase (De Vries et al.). Articles on these topics are coupled with discussion of regulation of purine biosynthesis in vertebrates (Wyngaarden and Holmes) and of purine biosynthesis and interconversion in microorganisms (Gots). Additionally there is a fascinating account by Zöllner and Gröbner of their studies on the relationship between the dietary intake of purines and pyrimidines and the rate of de novo synthesis which seem to show the absence of a direct relationship.

Much of the rest of the volume is devoted to studies designed to explore the relationship between purine metabolism and the control of cell proliferation in the light of the recent findings on combined immunodeficiency syndromes. It is apparent that much remains to be done in this area and we are not really yet at a point where any definitive statement is possible – however, once again there is evidence suggesting that the concentration of phosphoribosylpyrophosphate may be important.

In the final scientific article Burnstock outlines the purinergic nerve hypothesis which is gaining increasing credence. It is of considerable interest that this is only one example of a role for purines in intercellular communication. Other well-known examples include the role of 3′,5′-AMP in the aggregation of slime-molds and of ADP in blood platelets and it is perhaps a pity that this analogy was not drawn more strongly.

As with all CIBA symposia the book is beautifully presented. The discussions, often the most useful part of such volumes, are fully documented and there is a reasonable index. There is also a general coherence in the level of presentation in the articles and yet the volume appeared within 1 year of the data of the symposium. Even recognising the unusual resources of the CIBA Foundation these volumes prove it is possible to report the proceedings of a conference in a form which is useful in all respects to the reader. Would that all volumes derived from symposium proceedings matched this level of excellence and timeliness!

M. C. Scrutton

Contractile Systems in Non-Muscle Tissues

Edited by S. V. Perry, A. Margreth and R. S. Adelstein
North-Holland; Amsterdam, New York, 1977
xii + 360 pages. Dfl 80.00, $ 32.75

Under the flimsy veil of the cell membrane is a new-found land of microscopic cables, beams, anchorages, and tiny molecular engines, all busily involved in moving parts of the cell about its daily tasks. Each component is rapidly becoming identified: the cables are mostly actin, the beams tubulin, the anchorage sites α-actinin etc., though why and how the parts are put together remains largely mysterious. This somewhat Lilliputian image of the cell is the subject and product of a new sort of cell biology, as yet nameless, though it might well be called cell tectonics (from tekton, carpenter: The whole art of building useful and beautiful objects – OED). The tools of this trade are the SDS gel, the fluorescent antibody and a host of subtle structural probes and biochemical markers. What is in progress is a powerful synthesis of many hard-won results from muscle biochemistry, microscopy and, ironically, Victorian mechanics.

So rapid has been the expansion of this field that most of its discoveries are still lodged only in current journals; nowhere is there yet a smooth, introductory text by a single author. One must therefore rely for some scant sense of the integration of the field on symposium proceedings. will all their highly technical and uneven treatments, frequent redundancies and mingling of experimental minutiae with grand design.

A rapidly increasing number of hardcover symposium proceedings have sampled the field, from the seminal, but now dated 'Primitive Motile Systems in Cell Biology' (Allen, R. D. and Kamiya, H. eds (1964)